Laboratory has said it intends to support R&D for Large Liquid Argon TPC:

Three aspects of work:

technology transfer from existing (ICARUS) detector;
R & D concentrated on aspects that differ from ICARUS implementation;
development of appropriate organizations;

setup for lifetime (effect of materials and effectiveness of different adsorbers) under assembly in PAB.

Aim is to produce a viable design for a real detector.

Baseline concept follows ICARUS: viz

drift ionization electrons to 3 sets of wires (2 induction, 1 collection)

record signals on all wires with continuous waveform digitizing electronics

Concentrate on differences required for a multi-kton detector to be affordable

Specific topics:

Argon:

purification - techniques to obtain adequate electron lifetime (~ 50 ppt O_2 eq.)

assembly - contaminant effect of tank walls, industrial (not clean-room) assembly

Wire-planes:

long wires - mechanical robustness, tensioning, assembly

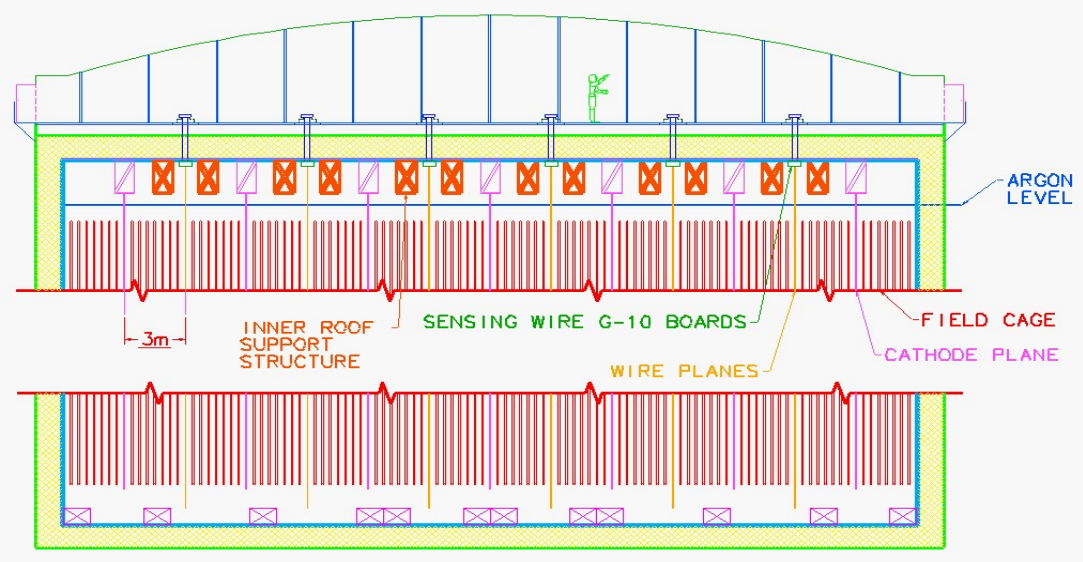
electronics - noise from large capacitance, routing from wire to front-end amplifier

Data processing:

Surface detector - automated cosmic ray rejection

- automated event recognition and reconstruction

Baseline Concept of Large Liquid Argon TPC (PPD Mech. Dept)



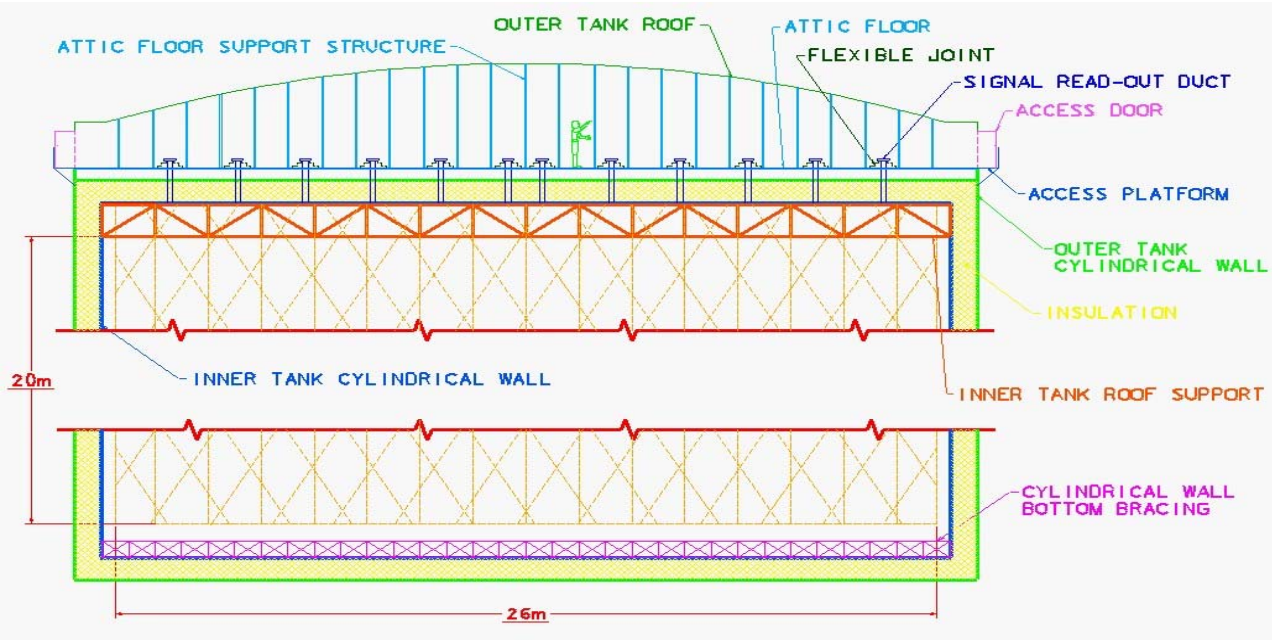
Showing

inner & outer tanks,

insulation and trusses,

wire-planes and field-cage,

electronics/DAQ floor



(15 kton version)

Status: things moving quickly over the past few weeks.

Within the laboratory:

- Have been receiving some support (for which we are truly grateful)
- Request for personnel and funds in hands of PPD (~8 FTE + $150k)
- PPD requesting 1 year plan
- General request for support to CD - simulation, reconstruction, DAQ
- Baseline `white paper' being prepared.

External:

- Small group of physicists (FNAL, Michigan State, Tufts , Yale, York (Canada)) has been interacting.
- Charge by DOE to NuSAG to consider Liquid Argon TPC for off-axis and declared Lab support have encouraged Princeton and UCLA to join the discussions recently.
- Need to form appropriate organizations - probably an R&D organization managed by Fermilab and an experiment organization.